

What is claimed is:

1. An insulation product comprising:

 an insulation sheet containing randomly oriented fibers bonded together,
said sheet having first and second major surfaces and a pair of side portions; and

5 a nonwoven facing layer bonded to at least one of said major surfaces, said
nonwoven facing layer comprising randomly oriented bicomponent fibers, each of said
bicomponent fibers including first component and second component portions, said
nonwoven facing layer being bonded to said at least one major surface at least in part by
a meltbond between said first component portion of said bicomponent fibers and said
10 randomly oriented fibers in said insulation sheet.
2. The insulation product of claim 1, wherein said sheet contains mineral
fibers, polymeric fibers, rotary glass fibers, textile glass fibers, stonewool fibers, natural
fibers or a combination thereof.
3. The insulation product of claim 1, wherein said first component portion
15 comprises a thermoplastic.
4. The insulation product of claim 1, wherein said first and second
component portions are selected from the group consisting of polyethylene,
polypropylene, polyester, polyethylene terephthalate, polybutylene terephthalate,
polycarbonate, polyamide, polyphenylene sulfide, polyolefin, PET (polyester) PEN
20 polyester, nylon 6,6 PCT polyester, polypropylene PBT polyester, nylon 6 co-
polyamides, polylactic acid polysterene, acetal polyurethane, and soluble copolyester
HDPE, LLDPE.
5. The insulation product of claim 1, wherein said second component portion
has a higher melting temperature than said first component portion.
- 25 6. The insulation product of claim 1, wherein said bicomponent fibers have a
length of less than about 1.0 inch.

7. The insulation product of claim 1, wherein said nonwoven facing layer comprises less than about 2.0 grams/ft² of said bicomponent fibers.

8. A method of manufacturing an insulation product comprising the following steps:

5 forming an insulation sheet containing randomly oriented fibers bonded together, said sheet having first and second major surfaces and a pair of side portions;

applying a layer of bicomponent fibers to at least one of said major surfaces, each of said bicomponent fibers including first component and second component portions; and

10 meltbonding a portion of said layer to said at least one of said major surfaces.

9. The method of claim 8, wherein said meltbonding step includes the step of heating said layer.

10. The method of claim 9, wherein said second component portion has a higher melting temperature than said first component portion, said heating step including
15 the step of heating said layer at a temperature at or above the melting temperature of said first component portion, whereby said first component portion of said bicomponent fibers is meltbonded to said randomly oriented fibers in said insulation sheet.

11. The method of claim 10, wherein said heating step includes the step of heating said layer at a temperature at or above the melting temperature of said first
20 component portion but below a melting temperature of said second component portion.

12. The method of claim 10, wherein said sheet contains mineral fibers, polymeric fibers, rotary glass fibers, textile glass fibers, stonewool fibers, natural fibers or a combination thereof.

13. The method of claim 10, wherein said first component portion comprises a
25 thermoplastic.

14. The method of claim 10, wherein said first and second component portions are selected from the group consisting of polyethylene, polypropylene, polyester, polyethylene terephthalate, polybutylene terephthalate, polycarbonate, polyamide, polyphenylene sulfide, polyolefin, PET (polyester) PEN polyester, nylon 6,6 PCT
5 polyester, polypropylene PBT polyester, nylon 6 co-polyamides, polylactic acid polysterene, acetal polyurethane, and soluble copolyester HDPE, LLDPE.

15. The method of claim 8, wherein said bicomponent fibers have a length of less than about 1.0 inch.

16. The method of claim 8, wherein said nonwoven facing layer comprises
10 less than about 2.0 grams/ft² of said bicomponent fibers.

17. A nonwoven facing layer for an insulation product comprising randomly oriented bicomponent fibers, each of said fibers including first component and second component portions, wherein said second component portion has a higher melting point than said first component portion.

18. The facing layer of claim 17, wherein said first component portion
15 comprises a thermoplastic.

19. The facing layer of claim 17, wherein said first and second component portions are selected from the group consisting of polyethylene, polypropylene, polyester, polyethylene terephthalate, polybutylene terephthalate, polycarbonate, polyamide,
20 polyphenylene sulfide, polyolefin, PET (polyester) PEN polyester, nylon 6,6 PCT polyester, polypropylene PBT polyester, nylon 6 co-polyamides, polylactic acid polysterene, acetal polyurethane, and soluble copolyester HDPE, LLDPE.

20. A system for manufacturing an insulation product comprising:

a conveyor for conveying an insulation sheet containing randomly oriented fibers
25 bonded together, said sheet having first and second major surfaces and a pair of side portions;

means for applying a layer of bicomponent fibers to at least one of said major surfaces, each of said bicomponent fibers including first component and second component portions; and

5 a heater disposed to heat said layer and said sheet, thereby forming a nonwoven layer meltbonded to said at least one of said major surfaces.

21. The system of claim 20, wherein said second component portion has a higher melting point than said first component portion, said heater heating said layer to a temperature at or above the melting temperature of said first component portion, whereby said first component portion of said bicomponent fibers is meltbonded to said randomly
10 oriented fibers in said insulation sheet.

22. The system of claim 21, wherein said sheet contains mineral fibers, polymeric fibers, rotary glass fibers, textile glass fibers, stonewool fibers, or a combination thereof.

23. The system of claim 21, wherein said first component portion comprises a
15 thermoplastic.

24. The system of claim 21, wherein said first and second component portions are selected from the group consisting of polyethylene, polypropylene, polyester, polyethylene terephthalate, polybutylene terephthalate, polycarbonate, polyamide, polyphenylene sulfide, polyolefin, PET (polyester) PEN polyester, nylon 6,6 PCT
20 polyester, polypropylene PBT polyester, nylon 6 co-polyamides, polylactic acid polysterene, acetal polyurethane, and soluble copolyester HDPE, LLDPE.

25. The system of claim 20, wherein said applying means includes:

a chamber disposed above said conveying means for depositing said bicomponent fibers onto said sheet, said chamber having a side wall, a top wall, and an opening at a
25 bottom thereof; and

at least one blower for transmitting said bicomponent fibers to said chamber.

26. The system of claim 25, wherein said chamber includes at least one opening on a side thereof coupled to said blower through a hose, wherein said hose is oriented such that the bicomponent fibers are blown into said chamber at an upward orientation toward said top wall.

5 27. The system of claim 26, wherein said top wall includes an air filter configured to block said bicomponent fibers from escaping through said top wall.

28. The system of claim 20, wherein said applying means includes a scatter coating system.